USEPA comments on "Appendix C Flow, Passage, Salinity, Turbidity" of BDCP "Effects Analysis"

What is the take home message to DWR/ICF from this paragraph? The proposed project is expected to change residence time of water in the southern delta, especially in the Stockton Deepwater ship channel where low levels of dissolved oxygen have long been a problem and much work has been done to address the problem. As accurately portrayed in the modeling discussion, dissolved oxygen levels are controlled by a variety of factors: temperature, residence time, organic loading, and aeration. Residence time in a tidal system is difficult to quantify, but the DSM2-based, particle tracking model used here is a good initial effort. Results are reported as the number of days for 50% of the particles to leave the delta under the various operational scenarios, which may not be chemically or biologically the most important measure but is a good index of effect.

Disclose the impacts of the preliminary project on flow, passage, salinity, and turbidity based on the analytical results (modeling for example) and then provide discussion and context. For example, Conclusion 8 appears to have little connection with the modeling results, dealing entirely with the anticipated benefits of an oxygen diffusion system. Provide the modeling result for DO levels, compare them to adopted water quality objectives and make conclusions on your results. After this discussion it is appropriate to discuss actions of other entities that will potentially mitigate the impacts of this project such as an oxygen diffusion system. (Moreover, conclusion 8 states that "*Reduction* in Stockton Deep Water Ship Channel DO levels will improve upstream migration conditions," whereas all efforts to date have aimed to *increase* DO levels. Not sure I understand this, are you pointing out a typo?)

Conclusions about estimated impacts should be based on modeling results that are directly comparable to objectives and/or established biological thresholds. Conclusions based on averages of all conditions. Modeling of in-stream conditions suggests that impacts of the project on residence time is likely to be substantially negative at times. The modeling, appropriately, used a wide range of hydrological conditions, but the report writers based their conclusions on averages of all conditions. (are we suggesting they block their results pe water year type? Can we be more clear about what they should do?)_Under wetter hydrologies, water flows rapidly through the San Joaquin River and impacts of the project are small. Under very dry hydrologies, residence times are already so long that changes due to the project have very little proportional impact. The greatest impacts of the project occur at those intermediate conditions when residence time is most greatly affected by pumping patterns associated with the export facilities. Figure 1 shows these patterns in terms of the percent increase in residence time due to the project vs number of days in the baseline.

Figure 1 compares the results of EBC1 vs PP_LLT, but results are similar for other comparisons of interest. Summarized modeling results average across all modeled hydrologies, and the impacts of the project are obscured. To estimate the impact on DO, the change in residence time for each modeled condition can be used with appropriate models (an entry to which can be found at http://www.sjrdotmdl.org/concept_model/). Then the number of times that the project would result in violations of dissolved oxygen standards (if any) could be easily reported.

As we comment on the toxins appendix, changes in residence time will alter the impact of toxins. Application of these residence time estimates can be used to identify the seasons and conditions under which toxin effects will be altered. If longer residence times occur at different times under the different scenarios and that will change the impacts on particular species.

The results from the particle tracking model used for residence time studies can easily be expanded to address changes in the fate and transport of toxins.

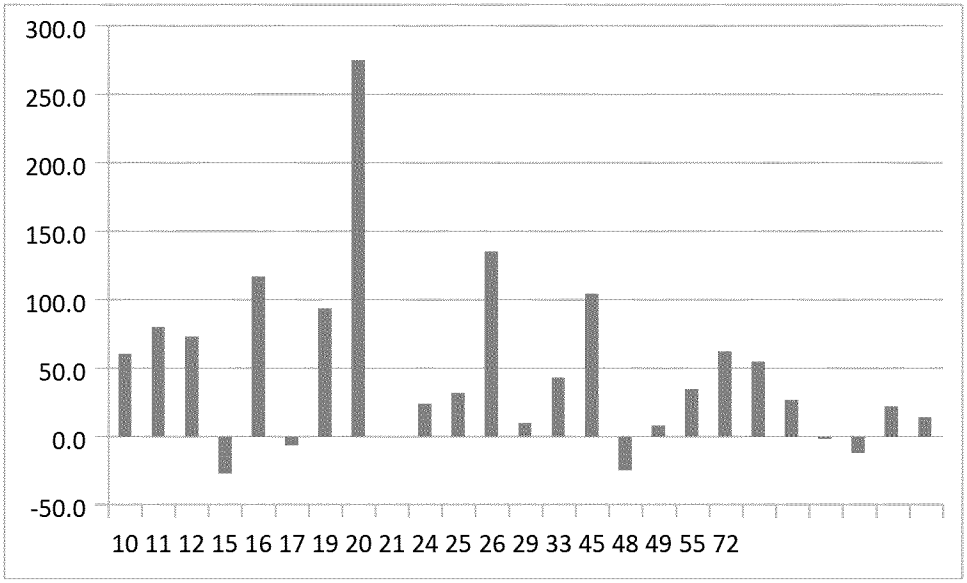

Figure 1. Percentage change in residence time in relation to baseline residence time. Note that at very high residence times the percent change is small, at low residence time the percentage is higher, but the number of days added is small. At intermediate baseline conditions both the number of days and the percentage change is sometimes substantial.